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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,043	01/21/2004	Weimin Zhang	019927-001810US	3805

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EXAMINER
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BOCURE, TESFALDET

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/763,043

Applicant(s)

ZHANG ET AL.

Examiner

Tesfaldet Bocure

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7/12/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Information Disclosure Statement*

1. The Examiner has approved the received Information Disclosure Statement on 7/12/04 and the initialed copy (one page) of the 1449 is attached with this correspondence. However, the duplicate copy received on the 7/12/04 has not been considered because the references cited are the same as the once considered by the Examiner.

### *Double Patenting*

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 6,704,372.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed invention in the instant application differs from that of the US patent number 6,704,372 that the selector has been claimed in claim 2, which depends on claim 1 of the instant application while in claim 1 in the US patent number 6,704,372 and as shown by highlighted comparison below.

It should be noted that the "one or more demodulators configured to receive and demodulate one or more ***digital RF channels selected from the plurality of separate digital RF channels***; therefore, a selector is silently claimed.

US patent Application No. 10/763,043 (Instant Application)	US patent number 6,704,372
1. A digital multi-channel demodulator circuit for processing a multi-channel analog RF signal, the multi-channel demodulator comprising: a frequency-block down-converter configured to receive the analog RF signal and to shift the analog RF signal to a lower frequency band; an analog-to-digital converter (ADC) configured to receive the analog RF signal from the frequency-block down-converter and to convert the analog RF signal	1. A digital multi-channel demodulator circuit for processing a multi-channel analog RF signal, the multi-channel demodulator comprising: a frequency-block down-converter configured to receive the analog RF signal and to shift the analog RF signal to a lower frequency band; an analog-to-digital converter (ADC) configured to receive the analog RF signal from the frequency-block down-converter and to convert the analog RF signal to a multi-channel digital

<p>to a multi-channel digital RF signal; a digital channel demultiplexer configured to receive the digital RF signal from the ADC and to demultiplex the digital RF signal into a plurality of separate digital RF channels; and one or more demodulators configured to receive and demodulate one or more digital RF channels selected from the plurality of separate digital RF channels.</p> <p>2. The circuit of claim 1 further comprising: <u><b>a selector configured to receive the plurality of separate digital RF channels from the digital channel demultiplexer and to select the one or more digital RF channels to be received by the one or more demodulators.</b></u></p>	<p>RF signal; a digital channel demultiplexer configured to receive the digital RF signal from the ADC and to demultiplex the digital RF signal into separate digital RF channels; <u><b>a selector configured to receive the separate digital RF channels and to select one or more separate digital RF channels;</b></u> and one or more demodulators configured to receive one or more of the selected digital RF channels from the selector and to demodulate the one or more selected digital RF channels.</p>
<p>3. The circuit of claim 1 wherein each separate digital RF channel comprises one or more data streams to be accessed or used by a subscriber</p>	<p>2. The circuit of claim 1 wherein each separate digital RF channel comprises one or more data streams to be accessed or used by a subscriber.</p>
<p>4. The circuit of claim 2 wherein the one or more demodulators demodulate only the RF channels that are selected by the selector.</p>	<p>3. The circuit of claim 1 wherein the one or more demodulators demodulate only the RF channels that are selected by the selector.</p>

5. The circuit of claim 2 further comprising a digital transport interface configured to receive the selected RF channels from the one or more demodulators and to output the selected RF channels.	4. The circuit of claim 1 further comprising a digital transport interface configured to receive the selected RF channels from the one or more demodulators and to output the selected RF channels.
6. The circuit of claim 1 further comprising a bandpass filter to reduce aliasing from unwanted signals.	5. The circuit of claim 1 further comprising a bandpass filter to reduce aliasing from unwanted signals.
7. The circuit of claim 1 wherein the ADC is a high-speed ADC.	6. The circuit of claim 1 wherein the ADC is a high-speed ADC.
8. The circuit of claim 1 wherein the ADC converts an entire signal band, the signal band including the multi-channel analog RF signal.	7. The circuit of claim 1 wherein the ADC converts an entire signal band, the signal band including the multi-channel analog RF signal.
9. The circuit of claim 1 wherein the one or more demodulators share resources.	8. The circuit of claim 1 wherein the one or more demodulators share resources.
10. The circuit of claim 1 wherein the digital channel demultiplexer includes a digital tuner.	9. The circuit of claim 1 wherein the digital channel demultiplexer includes a digital tuner.
11. The circuit of claim 10 wherein the digital tuner comprises: a numeric control oscillator (NCO) configured to generate a select frequency, the select frequency being	10. The circuit of claim 9 wherein the digital tuner comprises: a numeric control oscillator (NCO) configured to generate a select frequency, the select frequency being

associated with a corresponding RF channel; a complex multiplier configured to receive the digital RF signal and to multiply the digital RF signal with the select frequency; and a low-pass filter (LPF) configured to receive the digital RF signal and to pass the corresponding RF channel.	associated with a corresponding RF channel; a complex multiplier configured to receive the digital RF signal and to multiply the digital RF signal with the select frequency; and a low-pass filter (LPF) configured to receive the digital RF signal and to pass the corresponding RF channel.
12. The circuit of claim 11 wherein the LPF is a high-speed finite impulse response (FIR) filter.	11. The circuit of claim 10 wherein the LPF is a high-speed finite impulse response (FIR) filter.
13. The circuit of claim 1 wherein the digital multi-channel demodulator circuit processes downstream signals in at least one of a satellite system, a terrestrial TV system, and a cable system.	12. The circuit of claim 1 wherein the digital multi-channel demodulator circuit processes downstream signals in at least one of a satellite system, a terrestrial TV system, and a cable system.
14. A system using the circuit of claim 1 in combination with memory.	13. A system using the circuit of claim 1 in combination with memory.
15. A system using the circuit of claim 1 in combination with a processor.	14. A system using the circuit of claim 1 in combination with a processor.
16. The circuit of claim 1 wherein the digital channel demultiplexer is a polyphase channel demultiplexer.	15. The circuit of claim 1 wherein the digital channel demultiplexer is a polyphase channel demultiplexer.

17. The circuit of claim 16 wherein the polyphase channel demultiplexer comprises: one or more low-pass filters (LPF) configured to receive the multi-channel digital RF signal and to synchronize the RF channels; a discrete Fourier transform circuit (DFT) configured to receive the digital RF signal and to demultiplex the digital RF signal into separate RF channels.	16. The circuit of claim 16 wherein the polyphase channel demultiplexer comprises: one or more low-pass filters (LPF) configured to receive the multi-channel digital RF signal and to synchronize the RF channels; a discrete Fourier transform circuit (DFT) configured to receive the digital RF signal and to demultiplex the digital RF signal into separate RF channels.
18. The circuit of claim 17 wherein the DFT is a combination of different fast Fourier transforms.	17. The circuit of claim 16 wherein the DFT is a combination of different fast Fourier transforms
19. The circuit of claim 17 wherein the polyphase channel demultiplexer comprises at least two LPFs, the coefficients of each LPF filters being a part of a bigger low-pass filter.	18. The circuit of claim 16 wherein the polyphase channel demultiplexer comprises at least two LPFs, the coefficients of each LPF filter being a part of a bigger low-pass filter.
20. The circuit of claim 17 wherein the LPFs are low-speed finite impulse response (FIR) filters.	19. The circuit of claim 16 wherein the LPFs are low-speed finite impulse response (FIR) filters.



***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 21 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by **Niu et al** (US patent number 6,263,195).

**Niu et al.** (**Niu** hereinafter) teaches a wideband receiver (see figures 2,3,6-9 and 13-14) comprising: a digital tuner, wherein the tuner (14) having a digital sine-wave generator, claim NCO, and complex multiplying the received digital signal output signals from the demultiplexor by the output of the sine wave generator (36,38) as in claim 21; The receiver further having a low-pass-filter (24) which can be replaced by band pass filter with taps to control the frequency of the received signal, claimed low-pass filter having the structure of FIR as in claim 22.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gou** (US patent number 5,299,192) in view of **Nui** (US patent number 6,263,195).

**Guo et al.** (**Guo** hereinafter) teaches a multicarrier receiver comprising : a polyphase demultiplexor (figs 4 and 6), wherein the polyphase demultiplexor having a plurality of filters and Fourier transformer as in claims 23 and 24.

What **Gou** fails to teach is that the receiver having signal down sample circuit that samples the multichannel digital RF signal as in claim 23, and the filters being a finite impulse response filters as in claim 25.

**Nui** for the same endeavor as the instant application and that of **Gou** teaches a wideband satellite receiver having a down sampler and filter having the structure of FIR.

Therefore it would have been obvious to one of an ordinary skill in the art to use the down sampler (decimator) of **Nui** to minimize the number of samples to be process so that the processing time will be reduced as a result and FIR for digitally filtering the down sampled signal in order to have equalized received signal in the receiver of **Gou** at the time the invention was made.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Gou** (US patent number 5,299,192) in view of **Nui** (US patent number 6,263,195) as applied to claim 23 above, and further in view of **Olson** (US patent number 7,050,778).

**Gou** and **Nui** teach the claimed subject matter with respect to claim 23 as indicated above. Further **Gou** and **Nui** is suitable for receiving the signal transmitted though satellite. What f **Gou** and **Nui** fail to teach is that received plurality of signals being terrestrial TV and cable system as in claim 26.

**Olso** for the same endeavor as the instant application and that of **Gou** and **Nui** teaches a receiver for receiving terrestrial TV and cable having a tuner for tuning the received broadcast signal according to the frequency band of the broadcast channel and polyphase filter for selecting the channel of interest and reject the out of band signal. See figures 1a,2,3A,4 and 8.

Therefore, it would have been obvious to one of an ordinary skill in the art to use the teaching of **Olso** in the system of **Gou** and **Nui** to tune the broadcasted signal to the proper channel and to provide sufficient image rejection to meet the requirement of the NTSC (see abstract) at the time the invention was made.

### **Conclusion**

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tesfaldet Bocure whose telephone number is (571) 272-

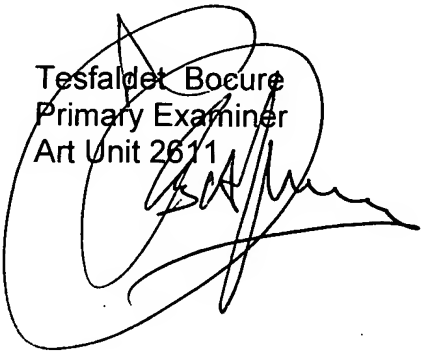
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3015. The examiner can normally be reached on Mon-Thur (7:30a-5:00p) & Mon.-Fri (7:30a-5:00p).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayanti (Jay) Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tesfaldet Bocure  
Primary Examiner  
Art Unit 2611



T.Bocure